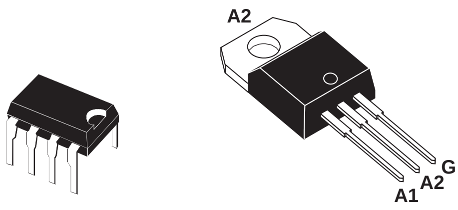
AUTOMATIC VOLTAGE SWITCH (SMPS < 200W)

CONTROLLER

- 50/60Hz FULL COMPATIBILITY
- INTEGRATED VOLTAGE REGULATOR
- TRIGGERING PULSE TRAIN OF THE TRIAC
- PARASITIC FILTER
- LOW POWER CONSUMPTION

TRIAC

- HIGH EFFICIENCY AND SAFETY SWITCHING
- UNINSULATED PACKAGE : AVS08CB
- INSULATED PACKAGE 2500V($_{RMS}$) : AVS08CBI
- V_{DRM} = ± 500 V
- $I_{T(RMS)}$: 5A



AVS1BCP08
DIP-8

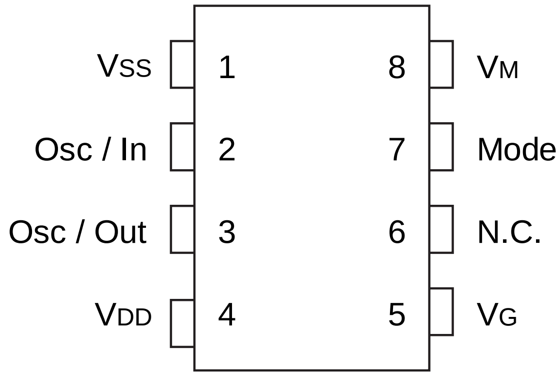
AVS08CB
TO-220AB

DESCRIPTION

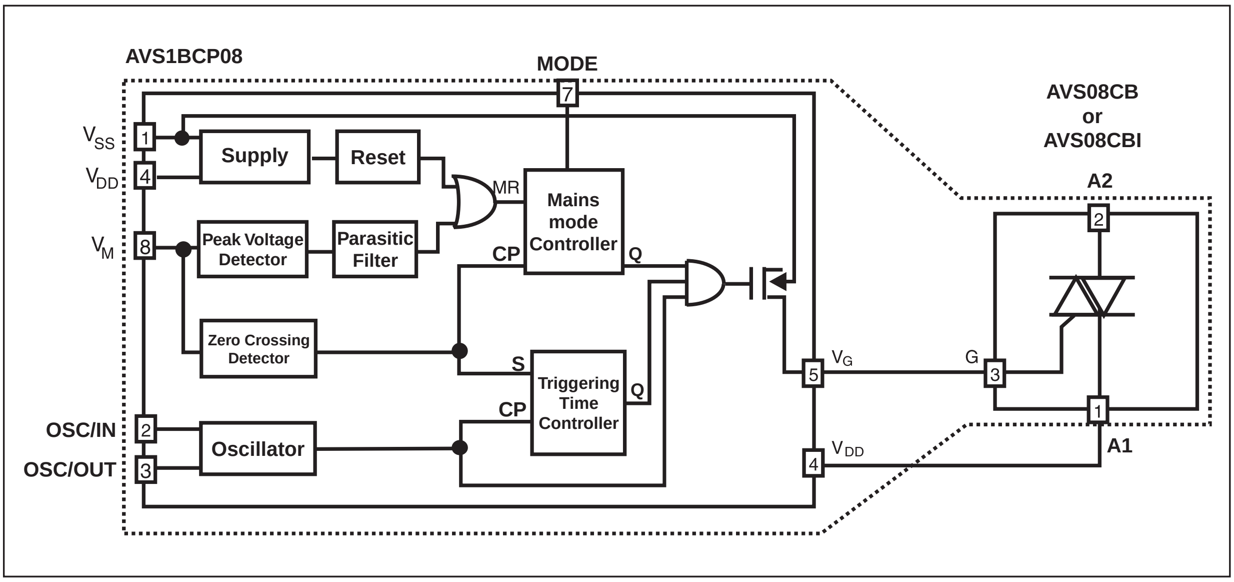
The AVS08 kit is an automatic mains selector (110/220V AC) to be used in SMPS < 200 W. It is composed of 2 devices :

- The **Controller** is optimized for low consumption and high security triggering of the triac. When connected to V_{SS}, the **mode** input activates an additional **option**. If the main power drops from 220V to 110V, the triac control remains locked to the 220V mode and avoids any high voltage spike when the voltage is restored to 220V.
  When connected to V_{DD}, the mode input desactivates this option.
- The **TRIAC** is specially designed for this application. An optimization between sensitivity and dynamic parameters of the triac gate highly reduces the losses of supply resistor and allows excellent immunity against disturbances.

PIN CONNECTION



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

CONTROLLER AVS1BCP08

Symbol	Parameter	Value		Unit
		Min.	Max.	
V_{SS}	Supply voltage	-12	0.5	V
V_I / V_O	I / O voltage	V_{SS} -0.5	0.5	V
I_I / I_O	I / O current	-40	+40	mA
Tstg	Storage Temperature	-60	+150	°C
Toper	Operating Temperature code "C"	0	+70	°C

TRIAC AVS08CB / AVS08CBI T_j = +25°C (unless otherwise specified)

Symbol	Parameter			Value	Unit
V_{DRM}	Repetitive peak off-state voltage (2)			± 500	V
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	AVS08CB	T_C = 100°C	5	A
		AVS08CBI	T_C = 95°C		
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)		t = 8.3ms t = 10ms	70 65	A
I^2t	I^2t value		t = 10ms	21	A^2s
dI / dt	Critical rate of rise of on-state current (1)		Repetitive F = 50Hz	20	A/µs
			Non Repetitive	100	
T_{stg} T_j	Storage Temperature Junction Temperature Range			- 40 + 125 - 10 + 125	°C

(1) Gate supply : I_G = 100mA – di/dt = 1A/µs

(2) T_j = 125°C

THERMAL RESISTANCE

TRIAC AVS08CB / AVS08CBI

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	AVS08CB	5.4	°C/W
		AVS08CBI	6.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F = 50Hz)	AVS08CB	4.0	°C/W
		AVS08CBI	4.7	

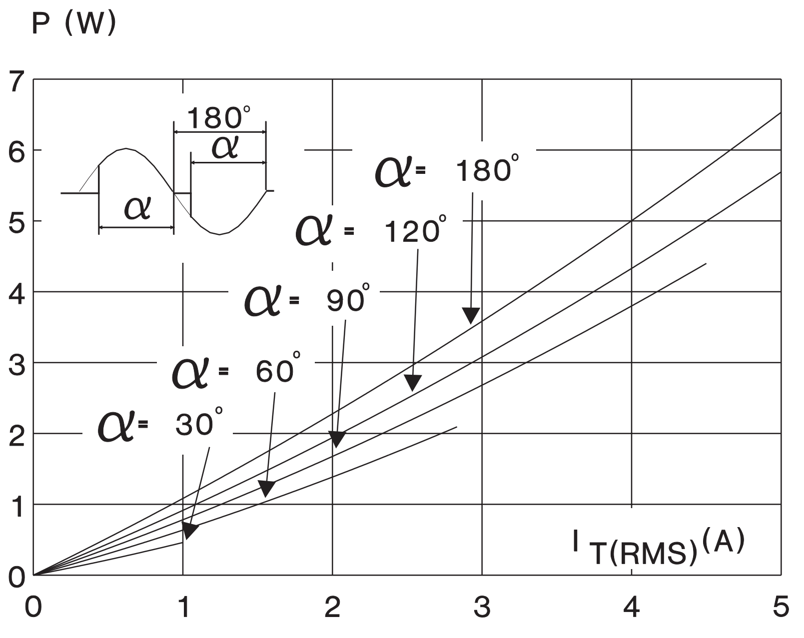
DC GENERAL ELECTRICAL CHARACTERISTICS

TRIAC AVS08CB / AVS08CBI

Symbol	Parameter		Value		Unit
			Min.	Max.	
V_{TM} *	I_{TM} = 7A t_p = 10ms	T_j = 25°C		1.65	V
I_{DRM} *	V_{DRM} rated Gate open	T_j = 25°C		10	µA

* For either polarity of electrode A_2 voltage with reference to electrode A_1

Fig. 1: Maximum RMS power dissipation versus RMS on-state current (F = 60Hz). (Curves are cut off by (dI/dt)c limitation)



DC GENERAL ELECTRICAL CHARACTERISTICS (continued)

CONTROLLER AVS1BCP08 Toper = 25°C (unless otherwise specified)

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
V_{SS} (pin 1) (Vreg)	Shunt regulator	-10	-9	-8	V
I_{SS} (pin 1) (Vreg) (@ V_{SS} = 9V)	Supply current	0.4		25	mA
I_{SS} (pin 1) (@ triac gate non connected)	Quiescent current			1	mA
F (pin 3) (@ R = 91kΩ) (C = 100pF)	Oscillator frequency	42	44	46	KHz
V_M (pin 8) Vth (3)	Peak voltage of detection high-threshold	4.08	4.25	4.42	V
V_M (pin 8) Vh (3)	Peak voltage of detection hysteresis	0.370	0.4	0.420	V
(1) V_M (pin 8) Vth (3)	Zero-crossing detection high-threshold	95	110	125	mV
V_M (pin 8) Vh (3)	Zero-crossing detection hysteresis	27	50	80	mV
(2) Vrazht (4)	Power-on-reset activation threshold		Vreg x 0.89		V
(2) Vrazlt (4)	Power-down-reset activation threshold	3		6.95	V
Mode (pin 7)	V_{IL} (4) V_{IH} (4)	 0.7 Vreg		0.3 Vreg	V
V_G (pin 5)	V_{OL} (I_{VG} = 25mA) Leakage current (V_G = V_{DD})			1 + 50	V µA

NOTE:

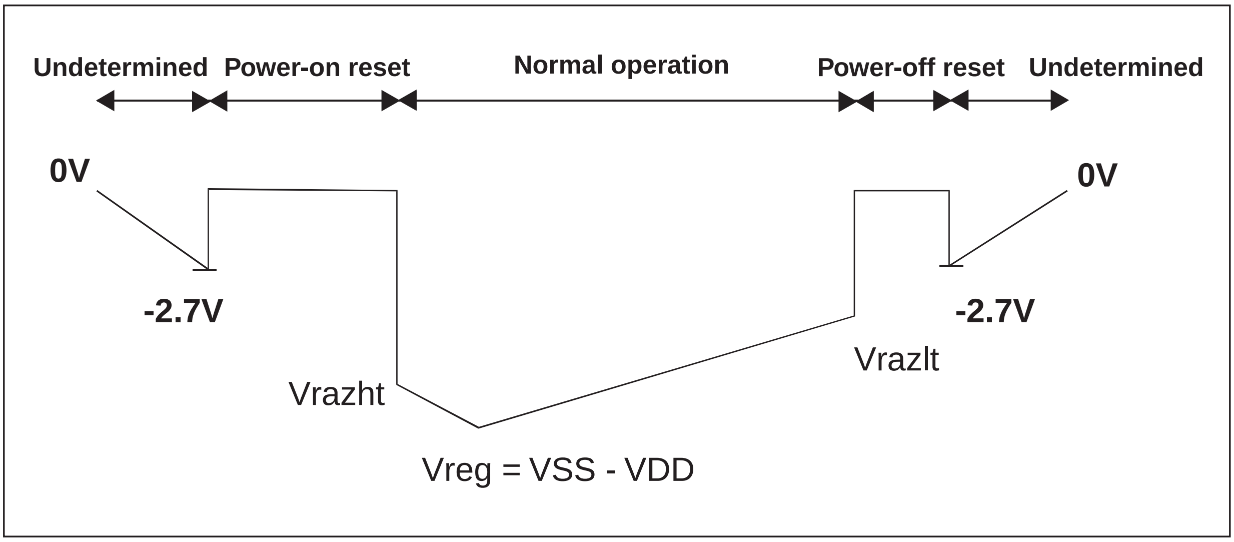
(1) : This value gives a typical noise immunity on the zero-crossing detectionof 110mV x 1018/18 = 6.20V on the main supply

(2) : See following diagram

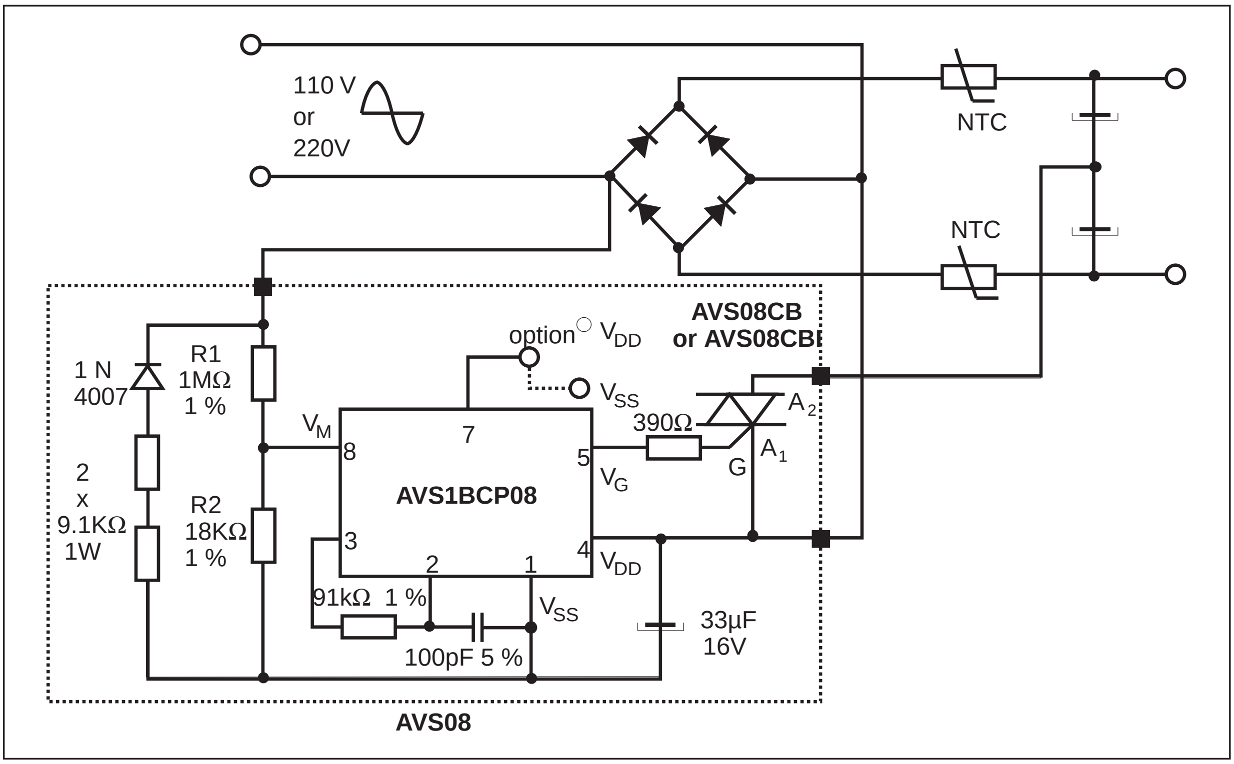
(3) : Voltage referred to V_{SS}

(4) : Voltage referred to V_{DD}

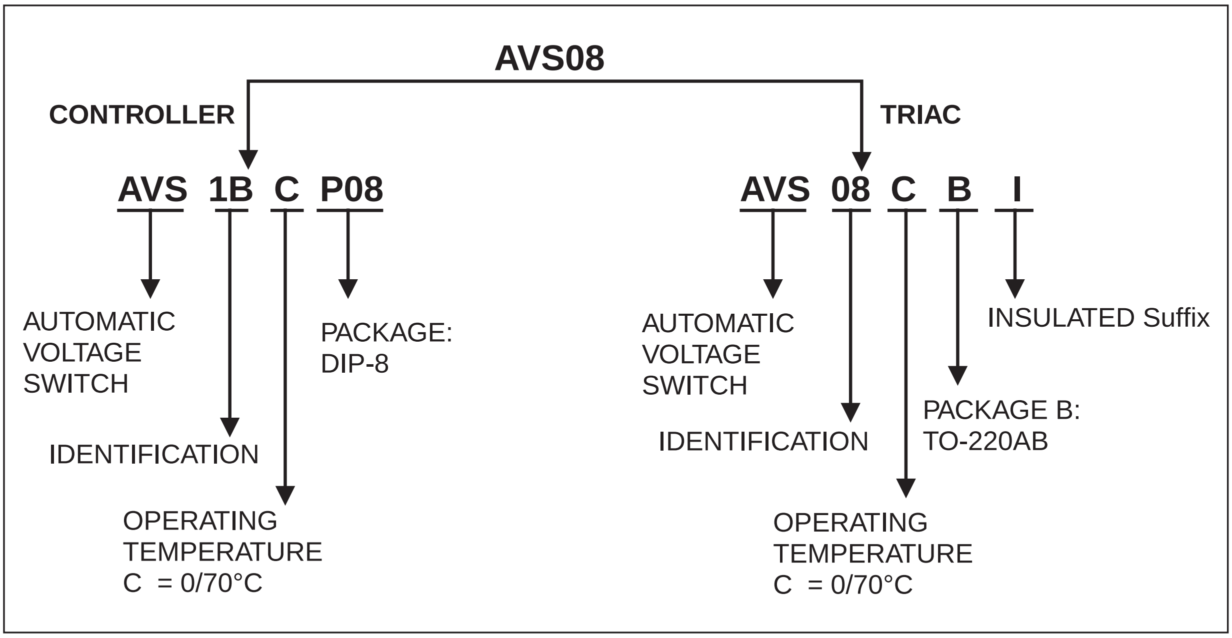
POWER-ON AND POWER-OFF RESET BEHAVIOUR



TYPICAL APPLICATION

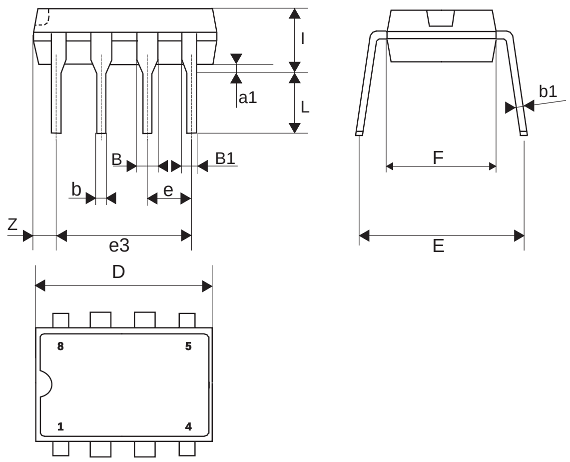


ORDERING INFORMATION



PACKAGE MECHANICAL DATA

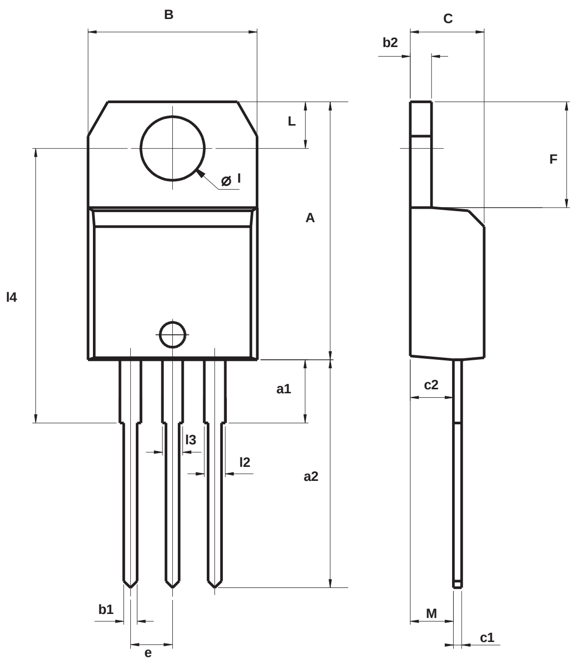
DIP-8 Plastic (controller)



REF.	DIMENSIONS					
	Millimetres			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
a1	0.70			0.027		
B	1.39		1.65	0.055		0.065
B1	0.91		1.04	0.036		0.041
b		0.5			0.020	
b1	0.38		0.50	0.015		0.020
D			9.80			0.385
E		8.8			0.346	
e		2.54			0.100	
e3		7.62			0.300	
F			7.1			0.280
I			4.8			0.189
L		3.3			0.130	
Z	0.44		1.60	0.017		0.063

PACKAGE MECHANICAL DATA

TO-220AB (Plastic) (Triac)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
I	3.75		3.85	0.147		0.151
I4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
I2	1.14		1.70	0.044		0.066
I3	1.14		1.70	0.044		0.066
M		2.60			0.102	

- Cooling method: C
- Recommended torque value: 0.8 m.N
- Maximum torque value: 1 m.N

OTHER INFORMATION

Part Number	Marking	Weight	Base Qty	Packing mode
AVS08CB	AVS08CB	2.3 g	1000	Tube
AVS08CBI	AVS08CBI	2.3 g	1000	Tube
AVS1BCP08	AVS1BCP08	0.6 g	2000	Tube

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